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ABSTRACT

A follow-up study of graduates from St. Mary's Junior College (Minnesota) associate degree nursing program is used to demonstrate a multi-trait, multi-method basis for arriving at faculty judgments about the outcomes of a program. The follow-up study attempted to determine: (1) graduates' and employing agencies' perceptions of competencies four months following graduation; (2) characteristics of the graduates' nursing careers and employment patterns; and (3) the manner in which graduates were utilized in nursing practice. The findings used evaluation matrices and statistical techniques to compare graduate self-evaluation and employer evaluation, college grade point averages, State Board composite and test scores, nursing grade point averages, and practices and types of employment. Faculty then reviewed the non-congruent areas which were revealed by the evaluation. The data obtained indicated (1) congruence between the intents or objectives of the program and evaluative judgments by nursing service personnel; (2) college GPA, nursing GPA, and State Board scores did not predict the employers' ratings of the graduates; and (3) a tendency for graduates with higher GPAs and higher State Board scores to be rated higher by the employer. (RN)

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FOLLOW-UP STUDIES IN NURSING:

A CASE FOR DETERMINING WHETHER PROGRAM OBJECTIVES ARE ACHIEVED

by

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FOLLOW-UP STUDIES IN NURSING:

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INTRODUCTION

The purpose of this article is to identify a methodology for evaluating innovative nursing programs. It is assumed that present methods of curriculum evaluation are based on traditional outcomes such as performance on state boards and nursing achievement tests. Traditional standards used for evaluation are inadequate when applied to innovative curricula. This inadequacy is based upon the differences in intents of various curricula. Therefore, the standards used to arrive at judgments need to reflect congruence or consistency with the particular curriculum intents.

HISTORICAL BACKGROUND

A follow-up study of graduates from St. Mary's Junior College (SMJC) Associate degree Nursing Program, Minneapolis, Minnesota, will be used to illustrate the development of a rational evaluation plan.¹ The follow-up study is an example of action research which supplements the on-going curricular evaluation. The following background

*We wish to acknowledge that both the curriculum and follow-up study discussed in this paper were group efforts of St. Mary's Junior College Nursing Faculty. However, the authors assume responsibility for the content of this paper.

information illustrates one faculty's concern with evaluating its graduates according to the philosophy and goals of its program.

The curriculum organization and content for the Nursing program were determined during a six-week faculty workshop held prior to the junior college opening in September, 1964. As a framework for the nursing curriculum, the nursing faculty decided to use Abraham Maslow's hierarchy of needs. It was felt that to begin with an understanding of the normal needs of healthy persons was essential to a later understanding of emotional and physical illness. The program became one with seven sequential courses in nursing. Each course was one quarter in length although one quarter was an accelerated summer session.

As students in the first class progressed in meeting the objectives of each course, they learned to use a problem-solving approach to patient care. At the same time, students studied the needs of human beings and interferences ill or hospitalized people encounter in meeting needs independently.

There were two primary reasons for undertaking a follow-up study of the graduates. To the knowledge of the faculty, an associate degree curriculum based on a hierarchy of normal needs had not been developed in nursing. Therefore, these graduates should be studied because their curriculum was unique. The curriculum represented an experiment in method, time, and objectives which required evaluation to ascertain whether the graduates were competent in the practice of technical nursing. Secondly, it was felt that

valid predictions for students in a particular program arise from evaluation of the graduate of that program. Previous predictions for the success' of St. Mary's graduates were based on a different curriculum (three-year diploma) and were not applicable to graduates of the associate degree program. Other reasons for conducting a follow-up study were to determine the utilization and employment patterns of these graduates.

Based on the previous considerations, the nursing faculty established a committee to study its first class of graduates in 1966. After review of the literature on curriculum evaluation, employment, and utilization of associate degree nursing graduates, the following purposes were identified for the follow-up study:

1. To determine by means of a questionnaire the graduates' and the employing agencies' perceptions of competencies four months following graduation.
2. To determine the characteristics of the graduates' nursing careers and employment patterns.
3. To determine the manner in which the graduates were utilized in nursing practice.

Development of Behavioral Statements

The goals or intents for graduates of the program were developed by the faculty and stated in a paper titled, "Competencies of the Nursing Program Graduates of St. Mary's Junior College." The paper was developed to first introduce the reader to the philosophy and objectives of the SMJC Nursing program. Then the paper went on to illustrate the performance of the graduates which could be expected

in selected areas of patient care. In arriving at statements of competency, all course objectives and areas of study were reviewed and the faculty arrived at a statement which they felt would have been achieved by all students successfully completing the program in nursing. The faculty used the statement of competencies in several ways. Foremost, the statement was used as a presentation of the minimal terminal behaviors characteristic of these graduates which reflected the faculty's philosophy of associate degree nursing education. Furthermore, the statement was used as a tool to facilitate communication between faculty, graduates, the public, and/or employing health care agencies. Since these graduates were among the first associate degree nurses prepared in Minnesota, it was essential to communicate how these graduates could best be utilized and what they would be competent to do in the health care field. For purposes of evaluation, an important use of the competencies was preparation of the employing agencies for the follow-up study.

Rationale

In innovative curricula development and evaluation, it is important to use a plan which incorporates both on-going and summative evaluation. Stake's approach to curriculum evaluation requires a curriculum rationale upon which two evaluative matrices can be established--one for description and the second for judgement. The formal curriculum evaluation plan thus takes the following form:²

Rationale	Intents	Observations	Standards	Judgments
		Antecedents		
		Transactions		
		Outcomes		
Description Matrix			Judgment Matrix	

In using the above evaluation plan, two phenomena are of concern as one gathers data. First, the curriculum evaluator searches for congruence across categories on a horizontal level. Secondly, the evaluator looks for logical and/or empirical contingency between categories on a vertical level. In this manner, it is the congruence and contingency between areas of the matrices which lead to such final judgments as whether or not the particular educational program is accomplishing what it intended to accomplish.

For purposes of this paper, the aspects of on-going evaluation from Stake's model will not be discussed. However, on-going evaluation of contingencies between intents, transactions, and outcomes were carried out during the period of the students' educational experience. In this paper, aspects of summative evaluation from Stake's model will be discussed as depicted by the follow-up study, State Board of Nursing examination scores, and final grade point averages. This provides for a multi-trait, multi-method basis for judgment of congruence between intents and outcomes.

Population

Because it was a manageable number (128 graduates in nursing), all graduates were included in the study. All subjects were admitted in September, 1964, at the opening of St. Mary's Junior College and graduated in June, 1966, with a major in nursing. Age, sex, previous college experiences, and working experiences were not controlled. Ability and past academic achievement were controlled to the extent that the admission standards of the college included a range of high school ranks from the fiftieth percentile to the ninety-ninth percentile, and a range of American College Testing battery composite scores from the fortieth percentile to the ninety-ninth percentile. However, these admission standards were not rigidly applied to this class.

Questionnaires

Two questionnaires were developed for the follow-up study. One questionnaire was sent to the graduates of the program four months following graduation. This questionnaire included requests for basic data about the individual, an employment history, and information about the orientation to the first position taken. The final portion of the questionnaire sent to graduates asked that the graduates rate themselves on a four-point scale as to the proficiency with which they performed selected nursing competencies. The competencies rated in the self-evaluation were taken from the paper describing the abilities of graduates.

A second questionnaire was developed for completion by the employer of the nursing graduate. This questionnaire was identical to the final portion of the questionnaire sent to the graduates. The health care agency employing the graduates was asked to have a nursing service person, working closely with the graduate, rate him on competencies at four months following graduation.

Both questionnaires listed fifty-eight competencies selected as representative of the curriculum. Following is an example of a selected competency that respondents were asked to rate:

When giving direct patient care, she has used the following steps of the problem-solving process:

- a. observation of patient behavior
- b. definition of the nursing problem
- c. search for additional facts
- d. redefinition or refinement of the nursing problem
- e. selection of nursing solutions according to established criteria
- f. establishment of criteria for evaluation of nursing solutions
- g. implementation of selected nursing solutions
- h. evaluation of nursing solution according to criteria established for evaluation

Findings

The descriptive data from sixty-nine graduate questionnaires concerning employment history, types of positions, responsibilities, and agency orientation were tabulated and percentages were obtained.

The graduates who sought staff nursing positions were able to find employment; 97 per cent of the respondents were employed four months following graduation and 91 per cent of the sixty-nine respondents reported hospital staff nurse positions. The respondents' functions and responsibilities were primarily in the area of patient care (88 per cent), although 37 per cent reported team leadership responsibilities and 25 per cent reported charge nurse responsibilities. The stated competencies of graduates specified that they were not prepared to function as team leaders or charge nurses without additional orientation and preparation from nursing service personnel. It is probable that graduates were being asked to perform such functions without adequate orientation. In terms of general orientation, the respondents felt they received desired help from nursing service in the areas of direct patient care, organization of work, leadership activities, establishment of priorities in patient care, and decision making.

As stated earlier, the graduates were asked to rate themselves at four months after graduation on their proficiency of performing the specified competencies. The graduates' employers were asked to rate them at four months after graduation on their proficiency of performing the same specified competencies. The graduates and the employers used a rating scale of no difficulty, some difficulty, great difficulty, or no opportunity. Percentages of responses were tabulated in each area and discrepancies between responses of graduate and employer were calculated. There were sixty-nine graduate respondents

and 101 employer respondents. Only the fifty-eight graduate and employer ratings which corresponded were used when calculating the discrepancy of responses of the employer from the graduate. Each of the fifty-eight competencies was analyzed separately. Only some of the findings will be summarized for the purpose of this paper.

In their rating of 101 graduates, the employers indicated that at least 10 per cent of the graduates had "great difficulty" performing eleven of the fifty-eight competencies. In their rating of themselves, at least 10 per cent of the sixty-nine graduates indicated that they had "great difficulty" in performing five of fifty-eight competencies. Only one of the preceding sixteen competencies were similarly rated by both groups.

In their self-rating, at least 20 per cent of the graduates indicated that they had "no opportunity" to perform eight of the fifty-eight competencies; however, 101 employers indicated that at least 20 per cent of the graduates had "no opportunity" to perform sixteen of the fifty-eight competencies. Every competency rated as such by the graduates was rated similarly by the employers.

In the analysis of the discrepancy between the ratings of fifty-eight graduates and the employers, at least 20 per cent of the graduates overrated themselves by one rating scale on nineteen competencies. At least 20 per cent underrated themselves on ten competencies when compared to the employer rating.

The information summarized in the following table represents an attempt to find relationships of the direct measures of program

intents and usual indirect measures. Tables 1 and 2 summarize the relationship between the employers' average rating of competency and the nursing grade point average and the State Board of Nursing Examination scores. Inspection of both relationships indicates a trend toward higher rating of competence and higher grade point averages and State Board composite scores.

Table 1. Comparison of Graduates' Nursing Grade Point Average and Employers' Average Rating for Each Graduate.

Nursing GPA	Employers' Average Rating of Competency*	Number Graduates
Less than 2.00	1.60	7
2.00 - 2.49	1.56	22
2.50 - 2.99	1.37	19
3.00 - 3.49	1.33	6
3.50 - 4.00	1.30	3**

*In scoring the employers' rating "no difficulty" equals 1. "Some difficulty" equals 2. "Great difficulty" equals 3. The scores for each graduate on each specified behavior were added and then averaged.

**Data of one graduate were eliminated.

The product-moment correlation was used to analyze the relationships between the nursing grade point average and the State Board Examination scores, college grade point average, the employers' average rating of competency. Similar analysis was done to compare the

Table 2. Comparison of State Board Composite Scores with Employers' Average-Rating.

State Board Composite	Employers' Average Rating of Competency*	Number of Graduates
200's	1.62	1
300's	1.52	22
400's	1.46	25
500's	1.24	6**
600's	1.40	2**

*The same procedure was followed in arriving at the employers' average rating as reported in Table 1.

**Data of one graduate were eliminated.

employers' average rating of competency and the State Board Composite score. It was found that the relationship between the nursing grade point average, the State Board Examination scores, and college grade point average were statistically significant at the 0.01 level. The employers' average rating of competency did not relate significantly with either the nursing grade point average or the State Board composite. This analysis is summarized in Table 3.

DISCUSSION

The previous presentation of findings combined information obtained by self-evaluation and employer evaluation with other data such as the college grade point averages, State Board scores, and

Table 3. Comparison of Nursing Grade Point Average, State Board Scores, College Grade Point Average, and Employers' Average Rating.

N-58	Nursing GPA	Employers' Average Rating of Competency
State Board Composite	+58 (.01)	-.14 (n.s.)
State Board Medical	+57 (.01)	
State Board Surgical	+54 (.01)	
State Board Obstetrics	+55 (.01)	
State Board Pediatrics	+57 (.01)	
State Board Psychiatric	+54 (.01)	
College GPA	+94 (.01)	
Employers' Average Rating of Competency	-.11 (n.s.)	

nursing grade point average. Such a collection of data provides a multi-trait, multi-method basis for the faculty judgments about the outcomes of an innovative program.

It is in the judgments phase that faculty seek the existence of congruence between the program's intents, observations, and standards which lead to evaluative decisions about a particular program. The process of curriculum innovation seems inherently endowed with internal and external conflict and criticism. However, changes in innovative programs are best made on the basis of data concerning the program intents. The use of matrices such as the ones proposed by

Stake are useful guides for faculty to systematically collect data for decision-making about curriculum revision and/or continuation.

The data obtained from and about the graduates concerning their employment history and practice were quite similar to the data expected and found in the research literature on utilization and practice of associate degree nursing graduates. From studying the previous tables, it can be seen that the college grade point average, the nursing grade point average, and the State Board scores did not predict the employers' ratings of the graduates. There was a tendency for graduates with higher grade point averages and higher State Board scores to be rated higher by the employer. It was felt that the data obtained demonstrated congruence between the intents or objectives of the program and evaluative judgments by nursing service personnel.

Overall, when analyzing the results of the data obtained in the follow-up study, the faculty considered several limitations of this study. For example, only 54 per cent of the graduates responded to the questionnaires. Follow-up procedures, such as second mailings and telephone contacts, did not succeed in achieving the 60 per cent minimum desired return rate. It is difficult to predict the effect on the data that would occur had the remaining 46 per cent of the graduates responded. Likewise, when the employer responded "no opportunity," it is difficult to know whether he meant the graduate had "no opportunity" to perform the competency or if the employer had no opportunity to observe the graduate performing the competency. Furthermore, it is difficult to be certain that the graduate and

employer interpreted the competencies with the same meaning.

The faculty felt that the questionnaires used in this study required continued refinement in order to arrive at statements of competency which were more similar in meaning to nursing service personnel and graduates. In addition, it was felt that increasing the number of possible ratings on a competency would allow greater discrimination between graduates.

It was determined that the follow-up study achieved a measure of the graduates' perception of competency and the employers' perception of graduate competency four months following graduation. These results held greatest relevance for faculty decisions concerning curriculum revision and/or continuation.

The most carefully reviewed areas were the eleven out of fifty-eight behaviors which employers indicated graduates had "great difficulty" and the five out of fifty-eight behaviors with which the graduates felt they had difficulty. For example, at least 10 per cent of employers' ratings indicated "great difficulty" in seven statements relating to the use of problem solving in approaching nursing care. This may have indicated that the individuals rating the graduates did not understand these behaviors, that the graduates had difficulty using problem solving in practice, or had difficulty interpreting such an approach to supervisory personnel. That at least 10 per cent of the employers rated the graduates as having "great difficulty" determining patients' perceptions may have indicated that the statement of behavior was too vague or difficult to

measure, especially since this difficulty was not reported by the graduates. The fact that employers reported that at least 10 per cent of the graduates had "great difficulty" giving information to patients and relatives was difficult to evaluate. The rater may have meant that the graduates had difficulty explaining such aspects as laboratory tests or more extensive patient-teaching situations. Reporting that graduates had "great difficulty" participating in the referral of patients to public health agencies may indicate a nursing situation in which continuity of care between acute hospitals and public health agencies is not achieved. The rating might also have meant that to some extent the objectives of the curriculum were realized in that the graduates were not prepared to design long-range care or make nursing diagnoses for the patient at some stages of illness.

The report by graduates that at least 10 per cent of the graduates had "great difficulty" evaluating the adequacy or inadequacy of patients' diets, providing care to the dying patient and his relatives, and understanding the laboratory tests commonly done to determine fluid and electrolyte balance concerned the faculty. The faculty questioned whether the on-going curriculum revision which had taken place would ensure that later students would perform more competently. The faculty also considered whether the statements of competency were appropriate for the beginning technical nurse.

It was found difficult to interpret those competency statements in which the graduates overrated or underrated themselves in

relation to the employers' rating. A concept felt important for faculty discussion was evaluation of student performance in the laboratory or clinical area. For example, did the laboratory evaluations achieve congruence between teacher and student rating of performance?

SUMMARY

This article attempted to present an approach to the evaluation of an innovative program in nursing. The development of nursing programs requires that care be taken to evaluate the graduates on the basis of program goals and/or objectives which are derived from a stated rationale for the program.

Aspects of Stake's model were used to demonstrate evaluation matrices considered in the evaluation of graduates of a new nursing program. Faculty reviewed the non-congruent areas revealed by the evaluation. Selected findings were reported comparing graduate self-evaluation and employer evaluation, college grade point averages, State Board composite and test scores, nursing grade point averages, practices and types of employment. The study demonstrates a multi-trait, multi-method basis for arriving at faculty judgments about the outcomes of a program.

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FOOTNOTES

1. For an account of the development of the SMJC program, see: From Diploma School to College: Two Case Studies on Changing Patterns Within Institutions for Nursing Education. Rochester, New York: National Commission for the Study of Nursing and Nursing Education, 1971. Lysaught's report describes the transition from a three-year diploma program to a two-year associate degree program in nursing.
2. Robert E. Stake. The Countenance of Educational Evaluation, p. 350. In, Anderson, Faust, Roderick, Cunningham and Andre. Current Research on Instruction. Englewood Cliffs, New Jersey: Prentice-Hall, 1969.